



U.S. Department  
of Transportation

# Overview of Travel Demand Management Measures

January 1994



**"Overview of Travel Demand Management Measures" is one of several planned reports on Travel Demand Management (TDM) provided by the Federal Highway Administration and the Federal Transit Administration. Other reports include "Implementing Effective Travel Demand Management Measures: Inventory of Measures and Synthesis of Experience," and "A Guidance Manual for Implementing Effective Employer-based Travel Demand Management Programs." These reports are intended to provide technical assistance to individuals in the public and private sectors who are responsible for planning, implementing, operating, and/or monitoring TDM activities. The reports serve to help educate on the state-of-the-practice and guide in the development of TDM programs.**

**Additional information on TDM may be obtained from:**

**The Office of Traffic Management/IVHS (HTV-31)  
Federal Highway Administration  
400 Seventh Street, SW  
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**or**

**The Office of Mobility Enhancement (TTS-10)  
Federal Transit Administration  
400 Seventh Street, SW  
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# **Overview of Travel Demand Management Measures**

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**Final Report  
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## PREFACE

### OVERVIEW OF TRAVEL DEMAND MANAGEMENT MEASURES

#### PURPOSE OF THIS REPORT

*Traffic congestion and the cost of providing mobility are compelling issues to planners, decision makers and members of both the business community and the general public. Transportation, and the degree of efficiency with which it is accomplished, affects us all. Therefore, we are constantly in search of solutions to our transportation problems that will give us not only increased mobility, but also greater economic productivity and a cleaner environment.*

*In light of these concerns, recent years have shown increased interest in measures which affect the demand side of the transportation equation. Because the resources to continue to meet transportation needs through infrastructure expansion are strained, and because travel trends suggest a worsening in the supply/demand balance, it has become necessary to see if increasing the efficiency of the travel demand itself can contribute to our efforts to improve mobility.*

***Travel Demand Management** -- or **TDM**, as it is popularly known -- describes a wide range of actions that are geared toward improving the efficiency of travel demand. Much has been said, studied, and written about this subject. There is much controversy and speculation as to the strength, role, and validity of TDM solutions. This uncertainty has probably led to misunderstandings of the role and potential of TDM, and therefore, a lower yield from TDM approaches than appears to be possible.*

*This report is the main product of a study that was sponsored by the Federal Highway Administration, with support from the Federal Transit Administration and the Institute of Transportation Engineers, to try to set the facts straight and provide the most comprehensive, accurate and useable guidance on TDM. The user will find in this report, and associated products available through this effort, a set of materials, statistics, guides and tools that should be of significant value in not only increasing the basic understanding of what TDM is, but on how to design and evaluate programs which will deliver the optimal potential that these strategies can offer.*

## **ACKNOWLEDGEMENTS**

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## **OVERVIEW OF TRAVEL DEMAND MANAGEMENT MEASURES**

### **INTRODUCTION**

Transportation systems provide an important service to our community. They allow people to move from one location to another. They provide the means by which goods can be delivered to almost any location in an urban area. And in an increasingly changing world, they connect us as a city, a region and a nation.

Increasingly, however, the normal day-to-day operation of the transportation system is becoming a concern to elected officials, planners, the business community, and residents. These concerns relate to many different issues: traffic cutting through neighborhood roads, congestion on local roads seemingly at all hours of the day, and poor air quality because of vehicle exhausts. The underlying phenomenon, of course, is that many of our communities have experienced tremendous growth over the past several decades. And given that much of this growth has occurred in suburban areas where alternatives to the automobile are not well established, this growth has caused a corresponding increase in the number of vehicles using the road network.

For years, the solution to the rising levels of congestion was to build new and bigger roads. This encouraged still more growth to occur in these areas of now higher and better accessibility, which once again resulted in increased congestion. Although road improvements will continue to be an important strategy for providing mobility, many communities no longer have the financial resources to build many new roads, would likely face serious environmental problems, and/or encounter strong public opposition. In addition, for those urban areas not in attainment with the federal clean air standards, federal law places substantial constraints on the type and magnitude of road expansion that can be undertaken.

In many of these areas, local officials and employers are turning to a new approach for providing transportation mobility that does not suffer from these problems--*Travel Demand Management (TDM)*.

### **WHAT IS TRAVEL DEMAND MANAGEMENT (TDM)?**

Quite simply, TDM programs are designed to maximize the people-moving capability of the transportation system by increasing the number of persons in a vehicle, or by influencing the time of, or need to, travel. To accomplish these types of changes, TDM programs must rely on incentives or disincentives to make these shifts in behavior attractive.

The term TDM encompasses both **alternatives** to driving alone and the techniques or **supporting strategies** that encourage the use of these modes. The application of such TDM alternatives and the implementation of supporting strategies can occur at different levels under the direction of a variety of groups. Certainly, one level of application found in many parts of the country is at individual employer sites, or at locations where there are many employers grouped together. In this situation, the employers become the important implementers of the TDM actions, even though they may be responding to a government mandate to do so.

***The primary purpose of TDM is to reduce the number of vehicles using the road system while providing a wide variety of mobility options to those who wish to travel.***

Another level of application is on an area-wide basis where government agencies often direct the initiative. In this type of application, the primary focus of the TDM program is to affect as many travelers as possible within an area-wide travel system. However, experience has shown that the effectiveness of area-wide TDM programs depends greatly on the type and level of participation of employers. The development of effective TDM programs therefore should be approached from the perspective of how public officials and local employers can work together to meet the goals of providing mobility.

## **TDM ALTERNATIVES**

At the level of the employment site, typical TDM alternatives to single occupant vehicles include:

- *carpools and vanpools;*
- *public and private transit, including buspools and shuttles;*
- *non-motorized travel, including bicycling and walking.*

TDM programs can also include alternatives to influence when travel occurs during a day, or if it occurs at all on some days. These efforts, which are usually classified as "alternative work hours", include:

- *compressed work weeks*, in which employees work a full 40-hour work week in fewer than the typical 5 days; and
- *flexible work schedules*, which allow employees to shift their work start

and end times (and thus travel times) to less congested times of the day.

A special kind of alternative which influences where work occurs and how often a trip is made is *telecommuting*. Telecommuting programs allow employees to work one or more days at home or at a "satellite work center", which is often closer to their homes and thus does not require a longer trip into the primary work location.

At the area-wide level, most of these same types of TDM alternatives are applicable. In addition, public agencies on area-wide concerns can supply:

- *Service improvements to transit service* that provide savings in costs and travel time;
- *Provision of preferential lanes* on (or access major roads to those roads) serving the area which provide time savings to those using ridesharing;

## **TDM STRATEGIES**

TDM strategies include improvements in alternative modes of transportation; financial or time incentives for the use of these alternative modes; information dissemination and marketing activities to promote these modes; and supporting services that make the use of alternatives more convenient or that remove psychological impediments to their use. Examples of TDM strategies include:

- *financial/time incentives*, for example preferential parking for ridesharers, subsidies for transit riders, and transportation allowances;
- *parking management programs*;
- *priority treatment for ridesharers*, for example, provision of preferential access and egress to parking lots; and
- *information and marketing*, such as on-site availability of transit schedules, periodic prize drawings for ridesharers; and guaranteed ride home programs.
- Application of site or *area-wide cost surcharges or subsidy measures* designed to make the relative cost of single occupant vehicle use higher than that for high occupancy vehicles.

A typical example of area-wide cost surcharges would be parking surcharges placed on employer and public parking lots that would provide a differential cost structure for single occupant vehicles versus ridesharers.

*TDM programs should be developed within the framework of overall planning for an area.*

## TDM IN PERSPECTIVE

An important consideration for the development of a TDM program is the relationship between the TDM alternatives under consideration and the proposed transportation improvements and land use plans for the area. In the public eye, traffic congestion is often considered an immediate problem. Quite simply, there are too many cars on the road. The solutions to this problem include all of the short-term (in relative terms) actions that were listed above. These short-term actions are really aimed at solving the more immediate issue of too many cars in one place at one time.

Of greater complexity, and perhaps of greater importance to a community, is the development of longer term congestion avoidance strategies. Such strategies necessarily focus on the root of the congestion problem and try to put in place a program that will preserve the capability of the transportation system to handle future travel demands. Congestion avoidance strategies fall mainly in two major categories--building significant additional capacity in the transportation system (such as new freeways or transit lines), and implementing land use/growth management policies that tie land use densities/designs to transportation system demand capability. Trip-making patterns, volumes, and modal distributions are largely a function of development patterns. Thus, exercising control over the trip generating characteristics of the land use (e.g., development density) can be used to make the resultant demand consistent with the existing transportation infrastructure and the level of service desired.

TDM programs should thus be developed within the framework of overall planning for an area. This planning should provide for the most cost effective transportation system improvements that reduce or alleviate traffic congestion. These improvements can include physical expansion of the highway system or additional transit services, and operational changes to improve the performance of the existing transportation system. It is no surprise that many transportation management associations (TMAs) have played a critical role in advocating improvements to the transportation system in their locale. TMA officials realize that such improvements, in concert with TDM actions, are necessary to truly enhance area-wide mobility.

The planning should also explicitly consider long-run congestion-avoidance strategies. This means that there needs to be some concern for future land use/development patterns and their impact on travel.

Taken from this broad perspective, the development of the TDM program should be viewed as consisting of complementary actions. For example, a ridesharing program (an effort to influence demand) can become more effective if some form of preferential treatment is provided enroute (e.g., a high occupancy vehicle lane) or at the destination (e.g., preferential parking), both changes to the transportation system. The effectiveness of the ridesharing program could be enhanced even further if developments were required to incorporate enhanced ridesharing activities into their design and use (a land use/development decision). A truly effective TDM program must consider how each TDM alternative and strategy complements one another.

Providing mobility in such a context thus may require, 1) innovation, 2) coordination including the participation of numerous groups, and 3) a short- and long-term perspective.

### **WHAT CAN WE EXPECT FROM A TDM PROGRAM?**

With the right mix of TDM alternatives and strategies, a TDM program at individual employment sites can be very effective, reducing vehicle trips by as much as 30 to 40 percent in relation to background conditions. TDM programs for individual sites can be tailored to worksite characteristics, market demographics, and tripmaking patterns. Information dissemination can be targeted to a well-defined set of employees, and a corporate "culture" can be created that reinforces the TDM message. However, experience has shown that effective TDM employer programs usually employ a wide variety of TDM alternatives and strategies, each mutually supporting the overall objective of trip reduction. Figure 1-1 shows the trip reduction results from several TDM applications around the country. As can be seen in this Figure, the results vary from one location to another. However, in each case employers implemented at least one strategy that reinforced the TDM alternatives that were available to employees.

***Effective TDM employer programs usually employ a wide variety of TDM alternatives and strategies, each mutually supporting the overall objective of trip reduction.***

Area-wide TDM programs are not likely to produce the levels of vehicle trip reduction shown in Figure 1-1 simply because there are a variety of travel segments using the transportation system, not all of which will be affected by the TDM initiatives. The target of TDM programs are generally work trips made by employees travelling to employment sites within the subject area. In area-wide TDM applicants, however, a more diverse group of travelers is traveling to a wide variety of locations at many different times. Not only are the travelers targeted by the TDM program using the roads, but so too are travelers passing through the area and also non-work travelers plus goods/freight movements. Traffic volumes related to these other travelers could increase while the volumes associated with the TDM markets decrease, which at the

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FIGURE 1-1 CHARACTERISTICS OF EMPLOYER TDM PROGRAMS

| Program                   | Vehicle Trip Reduction | Travel Base | Type Area <sup>1</sup> | Preferential Reserved Parking | Restricted Parking | Parking Charges | Employer Support Levels |         |         | Legal Requirement | Employee Modal Split <sup>2</sup> |         |         |         |    |
|---------------------------|------------------------|-------------|------------------------|-------------------------------|--------------------|-----------------|-------------------------|---------|---------|-------------------|-----------------------------------|---------|---------|---------|----|
|                           |                        |             |                        |                               |                    |                 | Transit                 | Carpool | Vanpool |                   | SOV                               | Transit | Carpool | Vanpool |    |
| Travelers                 | 47.9%                  | 10,000      | CBD                    | YES                           | YES                | YES             | YES                     | TRANSIT | HIGH    | HIGH              | HIGH                              | 33%     | 36%     | 36%     | 8% |
| US West                   | 47.1                   | 1,150       | SBP                    | YES                           | YES                | YES             | YES                     | HIGH    | HIGH    | HIGH              | YES                               | 26      | 14      | 60      | -  |
| NRC                       | 41.6                   | 1,100       | ISI                    | YES                           | YES                | YES             | YES                     | LOW     | HIGH    | NONE              | YES                               | 82      | 26      | 82      | -  |
| GEICO                     | 38.6                   | 2,500       | SBP                    | YES                           | YES                | YES             | YES                     | MEDIUM  | MEDIUM  | NONE              | YES                               | 82      | 31      | 82      | 4  |
| CH2M Hill                 | 31.2                   | 250         | SBP                    | NO                            | YES                | YES             | YES                     | HIGH    | HIGH    | HIGH              | YES                               | 82      | 14      | 82      | -  |
| State Farm                | 30.4                   | 600         | SBP                    | NO                            | NO                 | NO              | NO                      | HIGH    | HIGH    | NONE              | YES                               | 66      | -       | 31      | 2  |
| Pacific Bell              | 27.8                   | 6,900       | SBP                    | YES                           | YES                | NO              | YES                     | NONE    | HIGH    | MEDIUM            | YES                               | 63      | 2       | 82      | 11 |
| Hartford Steam Boiler     | 26.5                   | 1,100       | CBD                    | NO                            | YES                | YES             | YES                     | HIGH    | HIGH    | MEDIUM            | NO                                | 40      | 36      | 21      | 1  |
| Swedish Hospital          | 26.1                   | 2,500       | ISI                    | NO                            | YES                | YES             | YES                     | HIGH    | HIGH    | HIGH              | YES                               | 31      | 44      | 26      | -  |
| BelleVue City Hall        | 26.1                   | 600         | ISI                    | YES                           | YES                | YES             | YES                     | MEDIUM  | MEDIUM  | MEDIUM            | NO                                | 82      | 2       | 26      | 4  |
| San Diego Trust & Savings | 22.7                   | 500         | CBD                    | NO                            | YES                | YES             | YES                     | HIGH    | HIGH    | MEDIUM            | YES                               | 14      | 37      | 14      | -  |
| Pasadena City Hall        | 21.0                   | 350         | SBD                    | NO                            | YES                | YES             | YES                     | HIGH    | HIGH    | NONE              | YES                               | 58      | 7       | 27      | 2  |
| TransAmerica              | 20.0                   | 1,150       | CBD                    | YES                           | YES                | YES             | YES                     | MEDIUM  | MEDIUM  | HIGH              | YES                               | 82      | 14      | 14      | 11 |
| ARCO                      | 20.1                   | 2,000       | CBD                    | NO                            | YES                | YES             | YES                     | MEDIUM  | MEDIUM  | HIGH              | YES                               | 46      | 20      | 20      | 14 |
| Varian                    | 17.7                   | 3,200       | SBP                    | NO                            | YES                | NO              | YES                     | MEDIUM  | MEDIUM  | HIGH              | YES                               | 62      | 2       | 14      | 8  |
| AT&T                      | 30.4                   | 3,890       | SBP                    | YES                           | YES                | NO              | YES                     | LOW     | LOW     | LOW               | YES                               | 26      | 2       | 14      | 8  |
| Ventura County            | 30.4                   | 1,350       | OSI                    | NO                            | NO                 | NO              | NO                      | MEDIUM  | MEDIUM  | MEDIUM            | YES                               | 54      | 2       | 26      | -  |
| COMSIS                    | 10.5                   | 250         | SBP                    | NO                            | YES                | YES             | YES                     | MEDIUM  | MEDIUM  | NONE              | YES                               | 54      | 18      | 26      | -  |
| 3M                        | 9.7                    | 10,000      | OSI                    | NO                            | NO                 | NO              | NO                      | LOW     | LOW     | NONE              | NO                                | 31      | 2       | 14      | 8  |
| Allergan                  | 7.0                    | 1,250       | SBP                    | YES                           | NO                 | NO              | NO                      | MEDIUM  | MEDIUM  | HIGH              | YES                               | 76      | 2       | 18      | 7  |
| UCLA                      | 5.5                    | 16,000      | ISI                    | NO                            | YES                | YES             | YES                     | HIGH    | HIGH    | HIGH              | YES                               | 82      | 6       | 14      | 5  |
| Chevron                   | 3.7                    | 2,300       | SBP                    | YES                           | NO                 | NO              | NO                      | HIGH    | HIGH    | HIGH              | YES                               | 82      | 1       | 26      | 5  |

Key: CBD = Central Business District, SBD = Suburban Business District, ISI = Inner Suburb, isolated, OSI = Outer Suburb, isolated, SBP = Suburban Business Park

<sup>2</sup> May not sum to 100% because of walk, bike other.

area-wide scale could mean very little impact on congested transportation facilities. It is clear though that area-wide mandates for trip reduction are important for stimulating employer trip reduction programs. At this level of application, and with realistic levels of effort, one could expect between a 4 percent to 8 percent net reduction in vehicle trips.

Another perspective on the potential impact of TDM is the level of cost effectiveness associated with a TDM program. Accommodating travel demand through means other than single occupant vehicles can result in cost savings to three major TDM stakeholders--society at large, employers, and individual travelers.

The cost to society is in essence the cost of accommodating an additional single occupant vehicle commute trip on a crowded highway network. This cost is estimated to be \$6.75 per daily one-way 10.5 mile trip (\$13.50 per day). If this trip is instead handled by transit, the cost to society would be \$4.10 for a trip of the same length. For a carpool, the public cost would fall to \$2.70 per trip; and for a vanpool the cost would be \$0.56 per trip. Clearly, the savings to society of high occupancy vehicle use can be substantial.

To the employer, the costs of a TDM program can be quite favorable. The average direct cost to the 22 employers studied in this project to reduce a one-way vehicle trip was \$1.33. The net cost for the employer sample, considering parking spaces foregone and other savings to the employer, was a savings of \$0.43 per one-way trip for every vehicle trip reduced. To the individual traveler, the cost savings can also be dramatic. Ignoring the value of time that might be saved through preferential treatment of ridesharers, the costs of using high occupancy vehicles are shared across more individuals using that form of transportation. Thus, for example, the cost of a van pool with 12 occupants, which includes gas, parking, and wear/tear on the vehicle, is shared by the 12 occupants, so the direct cost of travel is less than that associated with the use of a single occupant vehicle.

The implication of these cost figures is that society, employers, and individuals are all paying much more than they need to have a good level of mobility.

## **WHAT MAKES A TDM PROGRAM WORK? MYTHS AND REALITIES**

Evaluation of TDM programs around the country provide a wide range of trip reduction results. Some employers are achieving a trip reduction of over 40 percent, while other efforts with similar levels of management commitment have produced trip reductions less than 10 percent. Why is there a difference? Importantly, is there evidence to suggest that some factors are more important than others in producing worthwhile trip reductions? The following are the myths and realities associated with

TDM programs.

**MYTH 1:** "Large firms have an easier time implementing successful TDM programs."

**Reality:** Although larger firms do often have significant resources that can be assigned to make a TDM program a success, there is no clear evidence that smaller companies have any greater difficulty. In the cases reviewed for this project, some of the smaller firms had more successful TDM programs than the larger firms.

**MYTH 2:** "Employer support measures such as rideshare matching, guaranteed ride home, transportation coordinators, are all I have to do to produce trip reductions."

**Reality:** Although employer support measures are very important in supporting TDM alternatives, they are not instruments that, in themselves, actually change behavior. A truly effective TDM program is one that provides alternatives to the traveler and then reinforces the TDM travel decision by implementing incentives and disincentives that are clearly perceived by the individual making the decision to travel.

**MYTH 3:** "TDM success is directly related to the type of land use conditions and transit services available to an employer at the employment site."

**Reality:** Having good transit service that already serves a site that experiences severe parking shortages could very well make it easier to reduce single occupant vehicle use. However, the measure of TDM program effectiveness is the level of trip reduction in relation to what is normal for that site. Thus, for example, a site could have the worst situation for trip reduction -- a heavily suburban area, no transit, and unlimited parking -- and still have a successful TDM program relative to its peers. In this case, the percent reduction in vehicle tripmaking would be more important than its modal split.

**MYTH 4:** "Let's put a transit line to our site, and our problems will be solved."

**Reality:** Where current, good transit service exists to a site, and the TDM program capitalizes on that opportunity by providing transit incentives to potential users, experience indicates that the transit service plays a key role in meeting TDM objectives. However, in those locations where transit currently is not a viable option (e.g., in many suburban locations), providing such service and developing support strategies has not been effective in

attracting large numbers of drivers.

**MYTH 5:** "Vanpool programs are the bread and butter of our TDM program."

**Reality:** For many years, the premier TDM alternative offered by many employers was a subsidized vanpool program. And the experience with these programs has been positive. Those firms developing serious programs have been able to place a substantial number of their employees in vanpools. However, a vanpool program by itself often does not provide substantial overall trip reduction. Some of the best examples of effective vanpool programs in the country also have the lowest overall trip reduction performance and the highest unit costs, simply because employers placed so much emphasis on this one alternative.

**MYTH 6:** "We can *flex* or *telecommute* our way out of the problem."

**Reality:** It all depends. Flexible work hour programs can be a benefit or liability to a TDM program. If the TDM target is to reduce peak hour congestion, removing vehicles from this peak hour through alternative work hour programs will be successful. If, however, the intent is to reduce total trips or vehicle miles (such as might be the case with air quality requirements), then alternative work hour programs might be counterproductive. In addition, flexible work hours have been found to make ridesharing arrangements more difficult. The same can be said about telecommuting. Certainly, telecommuting will reduce peak hour trip making. But there is some evidence to suggest that more trips are made during the day when the employee is at home.

**MYTH 7:** "Carpooling is insignificant when compared to vanpools or transit"

**Reality:** Carpooling tends to offer modest gains in terms of vehicle occupancy relative to vanpooling or transit. In essence, it takes more carpools to reach the same level of trip reduction that can be achieved through higher occupancy means. However, the results of this study indicate that a carpooling program is a common element of successful TDM programs. The employers who thoughtfully incorporated and meaningfully encouraged carpooling, among their more "colorful" options, consistently ranked highest in overall trip reduction. The reason for this is that carpooling appeals to market segments that rely most heavily on vehicle, characteristics of the single occupant vehicle, e.g., door-to-door convenience, relaxing environment, and commitment to schedule.

## **OTHER REALITIES**

The myths presented above are often heard in discussions that precede the creation of a TDM program. They are often founded on what is considered common sense or relate to information that is dated. There are other, perhaps more important, realities that have surfaced from this study that have not been subject to such myths. As such, they represent characteristics of TDM programs that are essential for achieving significant trip reductions.

**Parking Management:** Parking price and availability is a critical consideration in a traveler's decision on how to make a trip. In those situations where parking is unrestricted, efforts to coax travelers out of single occupant cars are difficult. Those sites with the best TDM program results are those where parking is restricted or managed in some way. Applying a surcharge for parking on top of restricting parking availability is a sure means of influencing the choice of travel mode. And revenues derived from these fees can be used to support the TDM program.

**Subsidies:** The vast majority of effective TDM programs in this study provided some sort of subsidy to those who did not drive alone. The most common measures included discounted or free parking for ridesharers and providing subsidies for transit passes. In one of the best examples of the impact of subsidies, one of the study sites which was located in a heavily suburban area, with no transit service, and abundant parking achieved a 30 percent trip reduction through progressive daily subsidies to ridesharers.

**Legal Requirement:** In many cases, the best examples of effective TDM programs are found in those jurisdictions that require trip reduction programs to be in place. The use of such a requirement is a good example of the interaction of the public sector responsibility for transportation system performance and the employer-based role in working with the public sector to further system performance objectives. However, the most effective legal requirement is one that is fairly specific on what targets are to be reached, probably provides guidance on measures to reach the target, and has some form of monitoring/enforcement mechanism built into it.

## **HOW DO WE SUCCESSFULLY IMPLEMENT A TDM PROGRAM?**

### **DEFINING A PROCESS**

The traditional way of beginning a TDM program is to examine the many different forms of organization that can be used to formalize or consolidate a TDM initiative. The TDM program for an area thus is the product of whatever organizational structure is put in place. What happens in such situations is that TDM program development

becomes subject to a wide variety of concerns and pressures that tend to limit the actual program options to those not having much of an impact. This is an unfortunate circumstance for TDM proponents because when a TDM program that is designed not to do much does not have great success in trip reduction, the logical conclusion is that TDM does not work.

***When a TDM program is designed to provide time or financial advantages to the commuter, fewer people will drive alone during the peak. When such advantages are not provided, the program will not accomplish much.***

A better approach to implementation is to drive the process by information. There needs to be a good understanding of what the problem is and what travel markets can be targeted for "solving" this problem. Decisions can then be made on what TDM alternatives and strategies need to be put in place, and importantly what mechanisms are required for their implementation.

This process can be best described in the following steps.

- (1) Determine the true nature and severity of your problem.
- (2) Assess where current transportation program plans are likely to lead you in resolving these problems and identify shortfalls where TDM strategies could be appropriate.
- (3) Using information, explore a range of TDM options available to you and assess the impact they will have on your transportation problem, with little concern at this point whether they are implementable.
- (4) Study the tradeoffs among the different alternative approaches regarding cost, timing, impact and other criteria important to local decision makers. Decide which TDM measures would be most effective to implement.
- (5) Decide what mechanisms you will need to implement your chosen program.

It seems clear that areas interested in TDM could be approaching the task of TDM program development from different starting points. Some areas have a good understanding of the nature and severity of the problem. Others do not. Some planning agencies already know what portion of the problem will be handled by proposed projects. Others do not. The proposed process suggested above therefore should be considered a general guide, with the specific steps that need to be taken

determined very early in the process.

#### **DEFINING AN IMPLEMENTATION STRATEGY**

Because by their very nature of trying to change human behavior, many travel demand management strategies are very often difficult to implement. Successful designs of TDM programs call for combinations of actions and action strategies. In addition, employer, employee and public agency participation is deemed critical to overall success. In most cases, the success of these actions relate to the fine level of attention paid to the details of implementation. Who were the constituencies most likely to support the strategy? What advantages will private employers see to their participation? How do we obtain top management commitment to demand management? How do we put together the private sector and public official coalition that is necessary for progress? These and many more issues often need to be addressed before TDM strategies and programs are implemented.

The key to a successful TDM program is therefore an effective implementation strategy. The best TDM plan will go nowhere unless great thought has been given to what steps need to be taken by whom. Success in putting together effective TDM programs lies in developing four basic ingredients--*commitment, constituency, coordination and continuity*. The development of the implementation strategy could very well lead to serious considerations of new institutional arrangements (e.g., management associations) and new financial mechanisms (impact fees) designed to

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fund TDM. Importantly, unless the area-wide or employment site TDM officials continue to monitor, assess, and adjust the program, it is likely that program effectiveness will decline.

Experience with TDM programs throughout the U.S. has indicated that there are three major areas where obstacles to implementation seem to arise: *motivation, empowerment, and perceptions*. Each of these is discussed below.

**Motivation:** TDM actions often represent substantial change from existing norms of behavior. This change could occur in organizational philosophy, approaches to finance, the process of decision-making on land use, infrastructure or transportation

service provision, and, most fundamentally, in individuals' travel behavior. Change is often difficult to achieve. And thus, some form of motivation is necessary to achieve or implement change. With relation to TDM, this change might focus on the developer to design a project that is conducive to TDM; the employer to find alternative ways for employees to travel to work or to locate in an area where employees will have the best travel and housing options; the individual traveler to consider using an alternative to driving alone; and the household to take advantage of residential locations that minimize commute distances and maximize availability of alternatives.

At its most basic level, the motivation for TDM participation is primarily one of self benefit. By implementing a TDM program, will the participants meet the requirements of a state or local statute and thus avoid the sanctions and/or embarrassment of non-compliance? Or, will the TDM program greatly ease the congestion problem in an area and thus make the commute easier? Or, by encouraging multi-occupant vehicle commutes, can the capital or leasing expense of future parking expansion be avoided?

No matter what the reason(s), the participants in a TDM program must be motivated to participate. The key challenge to those who are the initiators of the TDM program must be to motivate other participants to join the program. To do this, one must ask what is likely to motivate participation? What services are to be provided to participants that they might feel are beneficial? Or, what negative implications of non-action need to be emphasized to convince possible participants?

Private employers and corporate managers are key participants of TDM programs. Because the organizational culture of these participants is based on responding to top management direction, the successful inclusion of these participants in a TDM program requires that top management be committed to the program. Often, meetings are held early in the formulation stage to simply enlist top corporate support for TDM programs. The importance of these meetings thus rests in convincing corporate leaders of the importance of their participation and in sending this message to those subsequently responsible for implementing individual corporate elements of the program. The corporate leaders must be able to determine clearly what benefits will accrue to their company by participating in the program. In other words, they must be motivated. And, as the TDM program evolves over time, this motivation might change. For example, corporate leaders located in a high growth, congested area might enthusiastically endorse a transportation management association that is primarily involved in ridesharing activities. However, as congestion lessens or economic circumstances requires corporations to cut back their number of employees, the TMA might have to refocus its services and, once again, motivate corporate leaders to participate. There is some evidence to suggest that this is exactly what is happening in those areas of the country facing a downturn in economic conditions.

Providing motivation presupposes that there is some group able to do so. Experience with TDM programs around the country shows that the most successful programs are those which have some local body or corporation which is willing to champion a TDM program. It is usually this champion that provides the initial outlay of entrepreneurial energy which rallies other groups to participate. Public agencies are often not able to serve in this champion role. Many public agencies must work within existing institutional confines, or have restrictive geographic venues. Some governments lack sufficient power to direct other governments, or to work across jurisdictional boundaries. In addition, government agencies often have no effective means of involving the private sector in its activities. Finding a champion in such an institutional structure who can then motivate other participants is probably the most important obstacle that must be overcome in the implementation of TDM programs.

**Empowerment:** Once there is agreement among the participants to form a TDM program, there needs to be political, organizational, technical or financial capabilities that empower the participants to carry out the program. For example, a review of TDM programs in the U.S. indicated that the existence of a local TDM ordinance is a key factor in the successful implementation of TDM programs. Without such empowerment, local interests have a weak basis for generating support behind such a program. Likewise, inadequate legal and regulatory powers of municipalities or management organizations to implement or enforce TDM programs is a significant detriment to implementation.

Along with political or regulatory empowerment, funding is another important resource that allows TDM participants to implement an effective program. Although TDM strategies are often considered low-capital actions, funds are still necessary to provide the initial investment in planning or marketing that serve as the foundation of a good TDM program. And, in other cases, strategic transportation projects (a park-and-ride lot) or services (bus shuttles) might be necessary to make the program work. Some of the most effective TDM programs have occurred where the state government, most often the state department of transportation, has provided matching funds to locally generated contributions.

Another form of empowerment is the technical skills necessary to analyze, develop and implement a successful TDM program. Important skills and capabilities include:

- Understanding the nature of the suburban mobility problem, the trends and relationships which have produced the problem, and consequently why new highways alone cannot solve the problem.

Having a basic understanding of the relationship between land use patterns, auto dependency, and travel behavior.

- Being aware of the "menu" of TDM options, and having a sense of the travel markets/situations where they are most applicable; separating traditional perceptions about the appropriateness of particular solutions from objective evidence.
- Having the technical tools, information and training to properly evaluate the effectiveness of the different options.
- Having knowledge of how to manage the "process" of TDM, in terms of organizational development, education, outreach and promotion, consensus building, implementation and sustenance of the effort.

When such technical capability does not exist, TDM advocates often have a difficult time showing the benefits of the program and in developing the most effective application. Although technical resources are most important in the initial formative stages of a TDM program, the on-going effectiveness (and mid-stream corrections) of TDM programs often require constant technical analysis and evaluation.

**Perceptions:** There is often a great misunderstanding on what TDM can accomplish, and perhaps an even greater misunderstanding of what the different actors involved have to offer. In particular, in those situations where the TDM program involves the participation of both private and public sector representatives, there can be serious misperceptions of the motivations and roles of each group. Even within each sector, there are often preconceived notions on what different actors will likely contribute to the development of the program. Highway agencies are viewed as wanting to expand highway capacity. Transit agencies are viewed as mainly interested in providing fixed-route bus service. Planning agencies are viewed as global thinkers, with little ability to contribute to operations-oriented strategy formulation. Developers are perceived to be mainly interested in profit. Employers are considered to be unconcerned with employee transportation. Many of these preconceived notions must be overcome before any concerted effort can be undertaken in developing a successful TDM program.

### **IS TDM WORTH THE EFFORT?**

The answer to this question lies with you. TDM has proven to be an effective approach to reducing trips. However, it is not a panacea. TDM requires thoughtful examination of the alternatives, and careful planning of their implementation. Every time an employer sets work hours, or city officials deal with parking requirements and prices, or a transit agency sets fares, travel choices are affected.

The relationship between area-wide initiatives and employer-based efforts also needs to be considered. And perhaps most importantly, successful TDM needs a commitment to proceed, the development of a constituency that will support its efforts, the coordination among the many different groups that can affect a community's mobility and provision of a program of action that results in continuity over time.





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